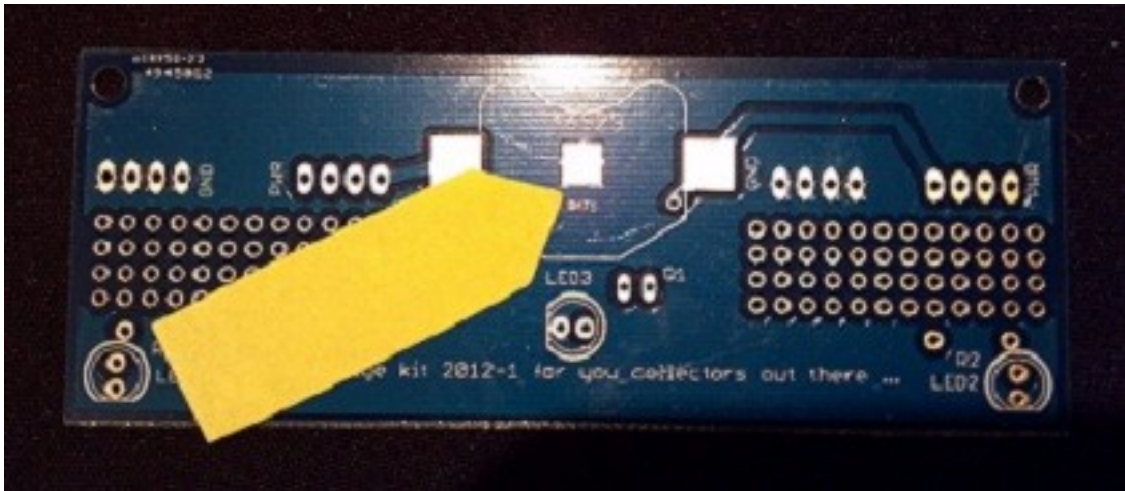


Penguicon 2012 Badge Instructions

This badge, or ribbon, is a good beginner project. There are 15 solder connections to make, including large pads for the battery holder and smaller pads for the LEDs and resistors. The exact assembly depends upon which LEDs you choose and whether you want to use a phototransistor for the center LED.

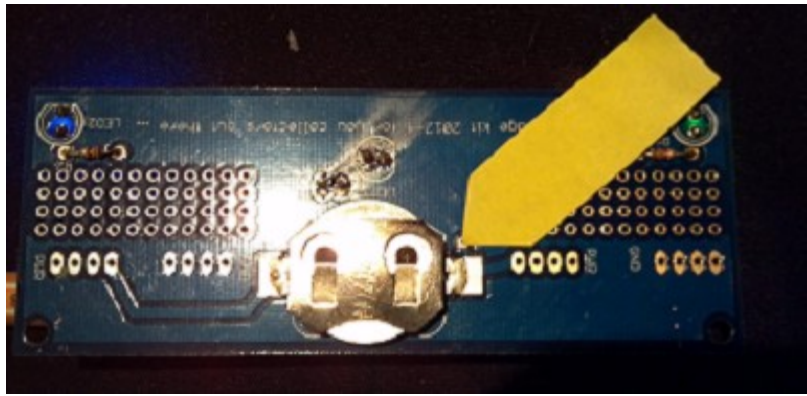
Step 1 – Battery holder center contact

The first thing to do is tin the center contact for the battery holder. The board is very flat, so it's likely that the battery will not make good contact with the board unless you add some solder to the middle contact. Place the tip of the soldering iron on the pad, making as much contact as the tip allows. Feed solder into the joint where the tip of the iron meets the board. As the solder melts, it will conduct heat better and the solder will flow onto the contact. You don't need a lot of solder – just enough to cover the whole pad area. Once you've got some solder there, move the tip around to get good coverage.



Step 2 – Battery holder

Place the battery holder on the board and center it so that the two tabs make good contact with the pads on the board. You may need to have someone hold it in place with pliers or some other tools while you solder the first tab. As you did with the center pad, place the tip of the iron on the pad and also make sure it touches the tab on the battery holder. Feed solder in and watch for the solder to “wick” under the tab. You should see a smooth metal surface from the pad to the tab. Once you're done, continue holding the battery holder in place for a few seconds to let the solder harden. If you release it too soon, it can shift. Solder the other tab in place.



Step 3 – Add in the LEDs, resistors, and phototransistor

This is where things vary. If you picked plain LEDs, get a 120 ohm resistor for each LED. Flashing LEDs do not require resistors. If you use a phototransistor, it only affects the center LED. Where no resistor is required, be sure to use a piece of wire to short across the pads where the resistor would be.

Insert all the components before you solder any of them. Then insert the battery to test them to make sure everything is inserted in the right orientation. LEDs have a flat spot on one side of the round edge. Line this flat spot up with the legend on the bottom of the board. The resistors can be inserted in either orientation.

Step 4 - Solder

Once you've got all the components on the board and checked out, solder them. It might help to bend the leads slightly to get the components to stay in place while you solder. Otherwise they tend to fall out.

Step 5 – Enjoy!

